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PRODUCT BULLETIN, NO.1282

Cisco IOS Software Release 12.1(5)EX on the Catalyst 6000 Family Supervisor

Overview

This product bulletin outlines the hardware and software features supported in Cisco IOS® Software Release 12.1(5)EX on the Catalyst 6000 Family Supervisor. Software Release 12.1(5)EX is the advent of the Catalyst 6500 Distributed Cisco Express Forwarding (dCEF) switching platform and its subsystems. Use this publication if you have the Cisco IOS Software for the Catalyst 6000 Family products, which run a minimum Cisco IOS Software Release 12.1(5)EX on both the Supervisor Engine 2 and the Multilayer Switch Feature Card 2 (MSFC).

Note: dCEF is supported only on Cisco IOS Software Release 12.1(5)EX on the Catalyst 6000 Family Supervisor.

New Hardware Supported

The following new hardware is supported.

Product Number	Description
WS-X6K-S2U-MSFC2	Supervisor Engine 2,256 MB of DRAM, dual 1000BASEX Gigabit Interface Converter (GBIC) uplinks, fabric-enabled1, Cisco Express Forwarding (CEF), enhanced quality-of-service (QoS) features, Policy Feature Card 2 (PFC2), and MSFC2. Factory ships with 256 MB on Supervisor 2 and 256 MB of DRAM on MSFC2
WS-X6K-S2U-MSFC2=	Spare
WS-X6K-S2-MSFC2	Supervisor Engine 2, dual 1000BASEX GBIC uplinks, fabric-enabled1, CEF, enhanced QoS features, PFC2, and MSFC2.MSFC2 Requires 256 MB of DRAM to run 12.1(5)EX
WS-X6K-S2-MSFC2=	Spare
WS-6500-SFM	256-Gbps Switch Fabric Module to support fabric-enabled modules
WS-6500-SFM=	Spare
WS-X6516-GBIC	16-port Gigabit Ethernet GBIC Switching Module, fabric-enabled
WS-X6516-GBIC=	Spare
WS-F6K-DFC	Distributed forwarding card (DFC)
WS-F6K-DFC=	Spare
MEM-DFC-256MB	256-MB DRAM option for DFC
MEM-DFC-256MB=	Spare

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Product Number	Description
MEM-DFC-512MB MEM-DFC-512MB=	512-MB DRAM option for DFC Spare
WS-6816-GBIC WS-6816-GBIC=	Dual serial channel to the switch fabric with DFC installed Spare
MEM-MSFC2-256MB MEM-MSFC2-256MB=	MSFC2 256-MB memory option Spare
MEM-MSFC2-512MB MEM-MSFC2-512MB=	MSFC2 memory option 512 MB Spare

Other Hardware Supported

The system supports all cards previously supported by the Cisco IOS Software on the Catalyst 6000 Family Supervisor, with the exception of FlexWan (WS-X6182-2PA), which is not supported with the Supervisor Engine 2 in this release.

Software Features

Feature	Description
Cisco IOS Software running on DFC to provide dCEF support	Supervisor Engine 2 and PFC2 provide IP unicast and IP multicast Layer 3 switching with CEF implemented on the PFC2. DFCs on line cards provide local IP unicast and IP multicast Layer 3 switching with CEF.
Support for redundant fabrics; detects failing fabric and switchover of all line cards	High-speed redundant crossbar fabric failover is transparent
Support for redundant supervisors	Supervisor redundancy is supported via Enhanced High System Availability (EHSA). A supervisor recovery requires the standby supervisor to first reset all line cards; in this case, a recovery takes from 30 to 90 seconds (configuration dependent). In addition, currently redundant MSFCs in a system cannot employ the Hot Standby Resource Protocol (HSRP) between the MSFCs. However, the primary MSFC can run HSRP with an external router; the standby MSFC becomes primary in the event of a failure.
Shared-tree multicast forwarding (*,G) support in hardware	Supports hardware switching of shared-tree multicast traffic in Protocol Independent Multicast (PIM) sparse mode.
Distributed multicast switching support with DFC	Multicast replication can be done on each of the DFCs rather than on the central forwarding engine.
Policy-based routing support in hardware	If a route-map match clause contains the next-hop option only, packets are switched in hardware. In this case, all the packets, including the first packets, are switched in hardware. Line-rate performance is achieved in this case. If a route-map match clause contains the length option and a set clause contains options such as precedence or default, next-hop packets are switched by the MSFC.
TCP intercept support in hardware	Feature is supported with hardware assistance by use of the multilayer switching (MLS) cache. SYN/FIN/RST packets are sent to the MSFC and switched in software. An MLS entry is established after switching the first data (non syn/fin/rst) packet in software. All subsequent packets are switched in hardware.

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Feature	Description
Enhanced reflexive ACLS support in hardware	Supervisor 2 uses the NetFlow table for dynamic reflexive access control list (ACL) entries; this allows better ternary content addressable memory (TCAM) usage for other ACLs.
ARP throttling support in hardware	Limits the rate at which packets reach the router for packets sent to a destination in a connected network. Most of these packets are dropped; a small number are sent to the router (rate limited). This can help prevent denial-of-service (DOS) attacks.
IP unicast RPF support in hardware	The Cisco IOS Software unicast RPF feature is supported in hardware on the PFC2. Sources and hosts that can be reached via multiple paths are forwarded to the MSFC2. For ACL-based RPF checks, traffic that matches the RPF ACL is forwarded to the MSFC2.
WCCP support in hardware	Web Cache Communication Protocol (WCCP) Layer 2 PFC Redirection with Supervisor Engine 2 and PFC2. This capability allows directly connected Cisco Cache Engines to use Layer 2 redirection, which is more efficient than Layer 3 redirection via generic routing encapsulation (GRE) encapsulation. A directly connected Cache Engine can be configured to negotiate use of the WCCP Layer 2 PFC Redirection feature.
Support for excess burst in aggregate policing, and the related support for two markdown maps-for normal and excess out-of-profile	Support for a two-level policing mechanism that allows two markdown thresholds or one markdown threshold and a drop threshold.
SSM, URD, and IGMP Version 3 Lite	Source Specific Multicast (SSM) is an extension of the IP Multicast protocol. SSM enables a receiving client, after it has learned about a particular multicast source through a directory service, such as a Web server, to then receive content directly from the source, rather than receiving it using a shared rendezvous point (RP) in PIM Sparse Mode. To enable timely deployment of SSM services in the face of non-SSM-enabled receiver applications or receiver host operating systems, Internet Group Management Protocol Version 3 (IGMPv3) also provides URL Rendevous Directory (URD) as an interim solution to signal source-specific membership: URD is the designated transition solution for content providers that want to use SSM-enabled receiver applications. URD enables existing applications to be SSM capable without modifying any receiver host software (application nor operating system) provided that the application is started via a Web browser. URD relies on the last-hop router towards a SSM receiver host to intercept URLs from a Web server to detect the source address of the SSM channel. Because IGMPv3 standards are not yet final, customers can use SSM using IGMPv3 Lite. IGMPv3 Lite includes software for hosts that provides a subset of proposed functions for the IGMPv3 application programming interface (API) required to write SSM applications.
IOS Server Load Balancing (ISLB) is enhanced to work in the distributed forwarding model	ISLB is enhanced to work with dCEF.

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Software Images

IOS running on DFC to provide dCEF support. This image is bundled as part of the c6sup22 software image and is not released separately.

Product Number	Description	Image
S6SUP22AV-12105EX	Catalyst 6000 SUP2/MSFC2 IOS ENTERPRISE W/VIP	c6sup22-jsv-mz.121-5.EX
S6SUP22AV-12105EX=	Spare	
S6SUP22AK2-12105EX	Catalyst 6000 SUP2/MSFC2 IOS ENTERPRISE W/VIP SSH 3DES	c6sup22-jk2sv-mz.121-5.EX
S6SUP22AK2-12105EX=	Spare	
S6SUP22BV-12105EX	Catalyst 6000 SUP2/MSFC2 IOS DESKTOP W/VIP	c6sup22-dsv-mz.121-5.EX
S6SUP22BV-12105EX=	Spare	
S6SUP22DV-12105EX	Catalyst 6000 SUP2/MSFC2 IP/IPX W/VIP	c6sup22-dsv-mz.121-5.EX
S6SUP22DV-12105EX=	Spare	
S6SUP22ZV-12105EX	Catalyst 6000 SUP2/MSFC2 IOS SERVICE PROVIDER W/VIP	c6sup22-psv-mz.121-5.EX
S6SUP22ZV-12105EX=	Spare	
S6SUP22ZK2-12105EX	Catalyst 6000 SUP2/MSFC2 IOS Service Provider W/VIP SSH 3DES	c6sup22-pk2sv-mz.121-5.EX
S6SUP22ZK2-12105EX=	Spare	

For more detailed information concerning this software release, refer to the Catalyst 6000 Family Release Notes at: http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/relnotes/index.htm

Refer also to the Catalyst 6000 Family documentation at: http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/index.htm

For additional questions regarding this release, or the Cisco IOS Software on the Catalyst 6000 Family Supervisor:send e-mail to ask-c6000-pm@cisco.com.

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